



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

US EPA RECORDS CENTER REGION 5



494769

REPLY TO THE ATTENTION OF:

MEMORANDUM

DATE:

SUBJECT: Enforcement Action Memorandum— Determination of Threat to Public Health and or the Environment at the Lindsay Light Removal Sites, Chicago, Cook County, Illinois (Site Spill ID # 05YL), (Site Spill ID # 05YT), and (Site Spill ID # 05ZA)

FROM: Verneta Simon, On-Scene Coordinator *VB for*
Emergency Response Branch II – Removal Section 4

Eugene Jablonowski, Health Physicist
Emergency Response Branch I – Field Services Section

THRU: Sam Borries, Chief *SB*
Emergency Response Branch II

TO: Richard C. Karl, Director
Superfund Division

I. PURPOSE

The purpose of this Enforcement Action Memorandum is to further document the determination of an imminent and substantial threat to public health and the environment posed by the existence of radioactively-contaminated soils at the Lindsay Light Removal Sites, which currently consist of Lindsay Light I (161 East Grand), Lindsay Light II Operable Units (OUs) 00 to 21, and Lindsay Light III (22 West Hubbard). This Enforcement Action Memorandum also documents the establishment of a procedure for allocating funds from a bankruptcy settlement and fraudulent conveyance settlement to specific OUs to address the threats posed at the Lindsay Light Removal Sites.

The Lindsay Light Removal Sites are located in two adjacent areas of Chicago, separated by the Chicago River, known as Streeterville and Lakeshore East or New Eastside. Since 1993, the U.S. Environmental Protection Agency (EPA) has been involved in response actions at multiple locations to identify and remove radioactive materials. To date, the EPA has not initiated any response actions using the On-Scene Coordinator \$50,000/\$250,000 delegation and warrant authority.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS # ILN000509092 (Lindsay Light I AKA Lindsay Light Company, 161 East Grand)
IL0000002212 (Lindsay Light II)
IL0000002204 (Lindsay Light III AKA 22 West Hubbard)

A. Site Description

1. Removal site evaluation

Beginning about 1904, the Lindsay Light Company (Lindsay) manufactured thorium nitrate gas light mantles at several locations in the Chicago neighborhood now known as Streeterville. Lindsay's first location in the Streeterville area was at 22 W. Hubbard Street (aka Lindsay Light III) and later Lindsay expanded operations to 316 E. Illinois Street (aka Lindsay Light II) and 161 E. Grand Avenue (aka Lindsay Light I). The Illinois Street site processed the ore and manufactured thorium nitrate, and the Hubbard Street and Grand Avenue locations manufactured the mantles.

After World War I began, thorium nitrate was no longer available from Germany, and, reportedly, Lindsay's Streeterville operation became the largest-producing U.S. thorium nitrate plant. Lindsay manufactured thorium nitrate by refining and extracting it from thorium containing ore, typically monazite. The refining process produced a sand-like waste known as thorium mill tailings. The tailings apparently were used as fill material throughout the low-lying Streeterville area of Chicago and to fill former boat slips in the Chicago Harbor, south of the Chicago River and directly across from Streeterville in an area known as the Lakeshore East or New Eastside neighborhood. In addition to the mill tailings, the Region suspects that thorium contamination was caused by thorium nitrate spills and leaks, and the disposal of thorium-contaminated equipment and items. In 1932, the company began moving its equipment and operations to West Chicago, Illinois. Lindsay's West Chicago operations resulted in four West Chicago Kerr-McGee Superfund sites. Lindsay reportedly closed its Chicago facilities in 1936.

Investigation and Cleanup Methodology. In 1993, EPA first identified thorium releases to the environment at Lindsay's 316 E. Illinois Street location where the owner/developer planned to construct a square block planned development. Subsequent investigations, over the next two decades, found thorium contamination in rights-of-ways (ROWs), at more than a dozen properties in the Streeterville neighborhood and directly across the Chicago River at the Lakeshore East/New Eastside neighborhood. Thorium-contaminated soil emits gamma radiation that may be found by radiation detection equipment. However, if overburden (e.g. soil, concrete, asphalt *etc.*) covers the contaminated soil, the overburden shields the radiation and may prevent detection. Overburden also prevents people from touching, inhaling, or eating the contamination and reduces human health risks to an acceptable risk range as long as the overburden remains in place. More specific actions are described in Section II B. (Other Actions to Date).

2. Physical location

The Lindsay Light Removal Sites are located in the Streeterville and Lakeshore East/New Eastside area of Chicago, Cook County, Illinois, spread out over approximately 295 acres. The geographical coordinates vary for each OU's specific property location. Currently, the Lindsay Light Removal Sites area has boundaries depicted on the website:

<http://www.epa.gov/region5/cleanup/lindsaylight/>.

Environmental Justice (EJ) analyses for existing OUs are located in each OU's administrative record. Region 5 used the EJ Screen Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT) to screen the area. Region 5 has reviewed environmental and demographic data for the areas surrounding the Lindsay Light Removal Sites, Chicago, Illinois, and typically, there is a low potential for EJ concerns at these locations.

3. Site Characteristics

The Streeterville/Lakeshore East/New Eastside area is a mixed residential, business and publicly-owned parks. Former uses of the existing OUs include commercial uses such as parking lots, restaurants, warehousing, manufacturing, rail yards, loading docks, *etc.*

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

Thorium is an extremely long-lived contaminant (14 billion years) and that may present a threat of release for many future generations if not removed during construction work. In addition, thorium contains radium 226 and radium 228, which are radionuclides and are hazardous substances as defined by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. ii 9604, 9606(a), 9607 and 9622, as amended (CERCLA), 42 U.S.C. i 101(1). Radium has a half-life of 1,620 years. Despite the City of Chicago's (City) computerized permit application system and recorded environmental covenants, unmonitored intrusions into radioactively-contaminated subsurface soils have not been eliminated. This action memorandum is intended to reduce the amount of radioactively-contaminated soils that may present a threat of release.

The Lindsay Light Removal Sites clean-up criterion is 7.1 picoCuries per gram (pCi/g) (Radium 226 + Radium 228). In addition to radioactive contamination, in April 2014, asbestos-contaminated gas light mantle ties were identified at Navy Pier. Soon afterward, more asbestos mantle ties associated with thorium contamination were found at Lindsay Light OU 14. Asbestos is a hazardous substance as defined by 40 CFR Section 302.4 of the National Contingency Plan. Sample analysis has confirmed the presence of asbestos ranging from greater than 1% up to 25 %. Asbestos content greater than 1%, represents a threat to the environment and public health and safety, especially due to the close proximity of pedestrians and construction workers to excavations.

5. NPL status

The Lindsay Light Removal Sites are not on the National Priorities List (NPL).

B. Other Actions to Date

1. Previous actions

Since 1993, EPA has been assessing and overseeing the cleanup of Lindsay-related contamination in the Streeterville area of Chicago. In 1996, EPA issued a Unilateral Administrative Order (UAO) to Kerr-McGee Chemical LLC (Kerr-McGee), the successor corporation to Lindsay, and to the owner and developer of River East at 316 East Illinois Street. In 2000, EPA amended the UAO to include the property west of the site, 200 East Illinois, otherwise known as Grand Pier or Lindsay Light II/RV3 Site. Since 2000, with EPA's direction and oversight generally provided pursuant to consensual orders, property owners and developers have investigated and cleaned up more than 12 radioactively-contaminated properties associated with Lindsay. The action memoranda and respective administrative records for these actions are incorporated by reference into this decision document as set forth in the administrative record (Attachment 1). Typically, all radioactively-contaminated material identified has been removed and disposed of at a facility licensed to accept such material. Generally, the only known radioactive contamination exceeding the cleanup standard allowed to remain in place in Streeterville or West Chicago has been intertwined with utilities or infrastructure of road ramps, and sidewalks and roadways and its removal presented significant engineering challenges.

Thorium Monitoring Area Established. In 2000, EPA conducted a scanner van gamma survey of Streeterville ROWs, but due to the overburden, it did not identify any previously unknown contamination. EPA then conducted radiological walkover gamma surveys across nearly all open areas (vacant lots, parking lots, and parks) in Streeterville and notified property owners of the need to monitor any subsurface work. Many properties' subsurface soil, however, could not and cannot be properly investigated until existing buildings or structures and overburden are removed during redevelopment at some future time. Thorium contaminated material has been removed from the buildings at 22 W. Hubbard (aka Lindsay Light III) and 161 E. Grand (aka Lindsay Light I). When these buildings are renovated or torn down, however, it is likely that additional contamination will be identified in, beneath or on top of the buildings.

Also, in 2000, using EPA's walkover surveys' results, historical information, known contamination, and best professional judgment, EPA and the City's former Department of Environment¹ established a "Thorium Monitoring Area" to protect construction and utility workers who may work or expose thorium in subsurface soil (and to prevent inadvertent release of contaminated material). To support the Thorium Monitoring Area, the City developed a computer system that requires any applicant for a permit to work in subsurface soil within the Thorium Monitoring Area to monitor for thorium contamination. (Note the Thorium Monitoring Area is generally coextensive with the Lindsay Light Removal Sites.) When a permit application is processed, the City notifies EPA of Thorium Monitoring Area permit applications, and as a

¹ Chicago Department of Environment was dissolved and staff was sent throughout the City Organization, for example, Chicago Department of Fleet and Facility Management (C2FM) and Chicago Department of Public Health (CDPH), etc.

condition of receiving a permit, requires the applicant to provide EPA access, perform radiation monitoring, implement a Health and Safety Program and provide the monitoring results to EPA. EPA has not required the City or ROW permit applicants (frequently utility companies) to enter into an enforcement agreement to ensure compliance with the Thorium Monitoring Area system. By using the monitoring system, the City, utilities and construction companies may avoid personal injury liability claims associated with thorium exposure.

EPA also hosts a web-based repository of radiation testing reports and other technical documents for work within the City's ROWs. The ROW reports allow utility companies and City departments to check to see if a specific area has already been tested and determined to be clear of contamination, or if the area still needs to be monitored.

In 2002, the Thorium Monitoring Area was enlarged after radioactive contamination was identified at the Lakeshore East/New Eastside property, a former rail yard and golf course located south of the Chicago River. Since there were few existing structures prior to construction, nearly all of the 26-acre property was radiologically surveyed pursuant to an EPA-approved work plan.

Table 1 lists Lindsay Light Removal Sites properties that have been investigated and cleaned up as required and also properties currently undergoing investigation and/or clean up. Site Owners and Developers have removed and shipped more than 55,000 cubic yards of contaminated soil to out-of-state facilities licensed to accept radioactive waste. There are still several properties known to have contamination requiring clean up and monitoring of subsurface work in the neighborhood. These cleanups likely will continue indefinitely. Due to the difficulty of detecting thorium and its long-lived nature (>14 billion years) Region 5 anticipates ongoing response work for many more years in the Thorium Monitoring Area.

Thorium Monitoring Procedure. To remove all radioactive contamination from properties undergoing redevelopment, site developers are required to first perform a radiological walkover survey of the property to find changes in gamma radiation levels that might be associated with subsurface contamination. Then, to be certain that any buried contaminated material at the property is found and removed, soil across the property is excavated in 18-inch layers or "18-inch lifts" and radiologically scanned until native soil is reached. Native soil (typically sand) may be found 5 to 15 feet below grade.

Although EPA strongly encourages owners/developers to identify and to remove all thorium contamination from the Thorium Monitoring Area, sometimes existing infrastructure or other buildings prevent full investigation or removal. To receive a completion letter from EPA, however, the owners/developers must identify, map, and record any uninvestigated or unremediated areas. Environmental covenants are recorded for private properties that contain such areas to prevent future unmonitored intrusion into known or potential radiological contamination.

EPA Administrative Settlement Agreements and Orders on Consent. Following the cleanups at River East and Grand Pier described above, it became apparent the thorium contamination was widespread. Subsequently, EPA developed a routine process for timely negotiation of removal Administrative Settlement and Order on Consent (ASAO). Typically, after the EPA receives the City's permit application notice of the planned subsurface work at a property, EPA contacts the owner to obtain access. EPA also prepares a draft ASAO for the owner/developer to

review. By negotiating the terms of the ASAOC prior to construction, expensive construction delays are avoided should contamination be found at the property. If radiological monitoring identifies thorium contamination, then the owner/developer immediately executes the removal ASAOC with EPA for the investigation and cleanup of the property.

Lenders and insurers are aware of the Lindsay Light Removal Sites potential for thorium contamination. Owners/developers enter into ASAOCs with EPA to satisfy the lenders' and insurers' concerns that the mortgaged property will be properly investigated and cleaned up. The owner/developers reimburse EPA's response costs which are paid into a Lindsay Light special account.

2. Current actions

Owners and developers working in the Thorium Monitoring Area have significant financial incentives to enter into consensual agreements with EPA to avoid interruptions during construction and accompanying added expense due to failure to timely and properly monitor and provide information to EPA. In addition to past completed ASAOCs there are currently several ongoing agreements and also properties at which the property owner and or developer has entered into ASAOC negotiations with EPA.

Currently, there is ongoing work or work planned at the following locations:

545 N. McClurg (OU 10)² (ASAOC)
Navy Pier Flyover (OU 17) (Cooperative Agreement)
Polk Bros. Park at Navy Pier (OU 21) (Draft ASAOC)
224-228 E. Ontario (OU 22)

Lindsay Light Removal Sites Special Account Reimbursement. In April 2015, Region 5 received the Office of Enforcement and Compliance (OECA) Assistance Prior Written Approval (PWA) for Special Account disbursements to private owners and/or developers and to the City of Chicago and Chicago Park District. Eligibility for Special Account disbursement is intended to provide incentive for comprehensive investigation and cleanup of the Lindsay-contaminated properties. Private developer/owner eligibility for Special Account reimbursement is based upon entry into an ASAOC and work conducted in accordance with an EPA-approved work plan. Further, any Special Account disbursement for Lindsay-related investigation, clean-up, and disposal costs must fully comply with the respective OECA Assistance PWA. See Enforcement Confidential OU 00 Prior Written Approvals dated April 1, 2015 and August 29, 2014 and – OU 04 and OU 17 Enforcement Confidential Prior Written Approval dated April 2, 2015. Per the Tronox Bankruptcy Settlement, the City and Chicago Park District's eligibility for Special Account reimbursement is based upon each party's entry into a Cooperative Agreement.

Consistent with the OECA PWAs, the disbursement process envisioned for the PRPs that entered into ASAOCs during the pendency of the Tronox bankruptcy and Anadarko fraud litigation as well as future PRP includes amending the existing ASAOC or entering into an ASAOC that requires a comprehensive investigation and cleanup of their property, submitting certified

² Most of OU10 was cleaned up pursuant to a 2007 ASAOC and a completion letter was issued for the property with the exception of Parcel 2. Parcel 2 of OU10 is expected to be investigated and cleaned up pursuant to a proposed ASAOC that is expected to be signed later FY 2015.

receipts for review, and then the reimbursement will be made. According to EPA's Special Account Guidance, to ensure that PRPs do not receive undue benefits by receipt of special account funds, PRPs should contribute at least their share of response costs at the site. While the PRPs, in this instance, are PRPs by virtue of owning contaminated property rather than by transporting or placing contamination at the property, it is appropriate for them to contribute to the site response costs at their property. Additionally, by making reimbursement contingent on investigating the property to native soils from property line to property line owners/developers will be motivated to conduct a comprehensive investigation. A thorough investigation and removal of contamination encountered will result in property that does not require institutional controls and continued Region 5 oversight.

Future Lindsay Light Site Removals Response Costs. The Lindsay Light Removal Sites response actions are removal not remedial actions. These removals actions use PRP funds not Congressionally-appropriated funds and are expected to continue for many years. The Lindsay Team recommends funding individual projects, a one-time \$900K radiation detection-related equipment acquisition cost, and \$25K annual radiation equipment maintenance expenses. Further, to minimize EPA review and owner/developer work plan development cost, EPA may develop a generic work plan that can be used at all properties investigated. This would allow development of the work plan prior to issuance of the property-specific ASAOC at minimal cost to the owner/developer and EPA. Additionally, if EPA resources are not available to audit the PRP receipts, it might be advisable to hire an independent third-party to evaluate the receipts provided by owners/developers, the City of Chicago, and the Chicago Park District for reasonableness.

Recently, the City of Chicago mentioned the possibility of developing an ordinance amendment that could bolster the enforcement of the Thorium Monitoring Area program.

As noted in Table 1 attached, there are buildings that are currently in use that are suspected to contain radiological contamination. These potentially contaminated buildings will need to be addressed during demolition and/or extensive renovation. EPA and the City of Chicago will need to develop a joint plan to address such scenarios. Such a joint plan would be an activity that could be funded via the Streeterville Cooperative Agreement.

C. State and Local Authorities' Roles

1. State and local actions to date

As discussed in more detail above in Section B.2., (Current Actions), in 1999, at EPA's request, the Chicago Department of Environment established right-of-way permit procedures to ensure radiological screening before and during work exposing or intruding into subsurface soils in Thorium Monitoring Area rights-of-ways. A description of the procedures and a map of the Thorium Monitoring Area are available on the City of Chicago's website:

http://www.cityofchicago.org/city/en/depts/cdph/provdrs/environmental_permitsregulation/svcs/appl_y_for_a_streetervilleright-of-wayorpropertypermit.html. EPA's Thorium Monitoring Area map is also attached to this Memorandum as Figure 1. These permit procedures have been useful but not 100% effective in preventing unmonitored intrusions into subsurface soils.

The State of Illinois's role is described below in Section C.2.

2. Potential for continued State/Local response

Beginning in 1993, EPA has directed CERCLA response activities for Lindsay Light-related radioactive contamination in Streeterville and Lakeshore East/New Eastside. In 1993, the Illinois Department of Nuclear Safety (now known as the Illinois Emergency Management Agency, Division of Nuclear Safety or "IEMA") participated in a joint building survey with EPA and the Agency for Toxic Substances and Disease Registry (ATSDR). IEMA has had very limited involvement with the Lindsay Light Removal Site because the Lindsay facility in downtown Chicago did not hold a license from the Atomic Energy Commission or the Nuclear Regulatory Commission (NRC) or the Illinois Agreement State authority conferred by the NRC. In contrast, IEMA has been and is currently involved with the Kerr-McGee West Chicago National Priorities List (NPL) sites associated with the Rare Earths Facility. The Rare Earths Facility was a federally licensed radioactive materials facility and is currently licensed by IEMA, under Agreement State authority. Due to limited resources, it appears unlikely the State will now choose to become involved in the unlicensed Lindsay response and enforcement activities.

The EPA has been working to develop the City's capacity to conduct future radiation monitoring and cleanup of its rights-of-ways by awarding a \$2.5 million Cooperative Agreement to the City of Chicago on September 25, 2012 to address the contamination in the City-owned Streeterville rights-of-ways. This Cooperative Agreement and a similar \$250,000 Cooperative Agreement with the Chicago Park District to remove radioactive contamination in DuSable Park were funded by a bankruptcy settlement with Tronox, LLC, a former subsidiary of Kerr-McGee and successor to Lindsay. Since the Anadarko Settlement Agreement has been approved by the federal district court and has withstood appeals, the City and Chicago Park District, are eligible for an additional estimated \$40 million and \$9 million, respectively, in settlement funds administered under the Cooperative Agreements. Currently, the City and Chicago Park District are developing work plans and continuing to drawdown from the respective Cooperative Agreements. In the meantime, the City is using Cooperative Agreement funds to purchase radiation monitoring equipment. EPA intends to provide training to the City on their newly purchased radiation equipment.

III. THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the Lindsay Removal Site may pose an imminent and substantial endangerment to public health or welfare or the environment, based upon factors set forth in the National Contingency Plan (NCP), 40 Code of Federal Regulations (C.F.R.) Section 300.415 (b)(2). These conditions include:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

Given EPA's extensive experience in Lindsay Light Removal Sites, soil samples ranging from 3.65 pCi/g to 10,420 pCi/g at the Lindsay Light II OU 04 Site, and gamma results as high as 1,000,000 counts per minute (cpm) in a contaminated area at the Lindsay Light II

OU 01 Site (In an uncontaminated area of the OU 01 Site, the count rate was 7,000 cpm), demonstrate that radioactively-contaminated soils related to Lindsay remain present throughout the Thorium Monitoring Area. Furthermore, pending construction, subsurface work and intended property use, an actual exposure threat to both human populations and the environment is present.

High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate;

Given the elevated gamma measurements detected throughout the Lindsay Light Removal Sites and elevated analytical soil concentration results, if proper measures to identify and control radiological contamination are not implemented, radioactively contaminated wastes may be released during current construction work. Post-construction institutional controls may not be effective in preventing exposure to these materials due to the long-lived nature of the contaminant.

Other situations or factors which may pose threats to public health or welfare or the environment;

Widespread use and dispersal of the radioactive material as fill within the neighborhood. Most of the Lindsay thorium is shielded from detection by asphalt, sidewalks, streets, and buildings. Consequently, appropriate response actions are necessary to monitor for radioactive contamination whenever subsurface soils are excavated or exposed to assure construction activities will not result in the uncontrolled exposure to or release of radioactive contamination or improper disposal of the radioactively-contaminated soils at or from the Site.

The availability of other appropriate federal or state response mechanisms to respond to the release;

As described in Section II, Site Conditions and Background and the Administrative Record, to date, EPA has taken the lead in investigating and directing the cleanup of Lindsay Light-related radioactive contamination in Streeterville. Private PRPs have routinely entered into ASAOCs with EPA and pursuant to the ASAOCs; those private PRPs have funded the cleanups and paid EPA's response costs. There are no other appropriate federal or state response mechanisms to respond to the release.

IV. ENDANGERMENT DETERMINATION

Given the Lindsay Light Removal Sites condition, the nature of the contaminants, radioactive materials that cause external exposure, inhalation, ingestion, and direct contact hazards, as described in Sections II and III above, actual or threatened releases of hazardous substances from the Lindsay Light Removal Sites, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions:

1. Proposed Action Description:

PRP activities at the Lindsay Light Removal Sites will include, but are not limited to, investigation, excavation, management and proper transportation and disposal of contaminated soils prior to construction. The property owners/developers must enter into an administrative settlement to investigate, remove and dispose of radioactively-contaminated material. If any area is uninvestigated or if contamination is not removed, the owners/developers must also agree to place a recorded uniform environmental covenant institutional control on the property that runs with the land and that will require radiation monitoring whenever subsurface soils at the property are exposed or excavated. EPA proposes to use Lindsay Light II Special Account funds to reimburse the developers/owners the costs investigation, excavation, management and transportation and disposal of contaminated soils.

2. Contribution to Remedial Performance:

The proposed action will not impede future responses based upon available information.

3. Applicable or Relevant and Appropriate Requirements (ARARs)

All applicable or relevant and appropriate requirements (ARARs) will be complied with to the extent practicable. The primary federal Applicable or Relevant and Appropriate Regulation for radioactive soil cleanup criteria is Title 40 CFR Part 192, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings." Ancillary ARARs include the NRC's Title 10 CFR Part 20, "Standards for Protection Against Radiation," NRC Regulatory Guide 1.86, "Termination of Operating License for Nuclear Reactors," and the Department of Transportation's Title 49 for shipping hazardous materials. Relevant EPA guidance includes OSWER Directive No. 9200.4-25, issued February 12, 1998, regarding the "Use of Soil Cleanup Criteria in 40 CFR Part 192, as Remediation Goals for CERCLA Site."

Many of the regulations carried out by the NRC have been delegated to the Illinois Emergency Management Agency, Division of Nuclear Safety. The State has previously identified the regulations at 32 Ill. Administrative Code 332, Licensing Requirements for Source Material Milling Facilities which contain the licensing requirements for source material milling facilities in Illinois as relevant and appropriate to the cleanup of thorium in Streeterville. The cleanup standard for soils and sediment at the Lindsay Light Removal Sites derived from the foregoing federal and state regulations is 7.1 pCi/g combined radium.

EPA will also implement the principle of ALARA (As Low As Reasonably Achievable) that refers to the cleanup of all materials above the cleanup standard, to the extent practicable. ALARA is described in DOE and NRC orders and regulations and in EPA regulations at 40 CFR § 192.22. EPA made the decision to achieve ALARA in an attempt to maximize protection of human health.

4. Project Schedule:

Not applicable

B. Estimated Costs:

Not available, since this is an Enforcement Action Memorandum.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants or contaminants at the facility which may pose an imminent and substantial endangerment to public health and safety, and to the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VI. CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed or non-action may result in increased likelihood of external exposure, inhalation, ingestion or direct contact to human populations accessing and working on the site. Also, since there is no threshold for radiological risk, additional exposure to radiological materials will increase the cancer risk.

VII. OUTSTANDING POLICY ISSUES

Unquestionably, the market value of any Lindsay Light Removal Site property that is investigated and cleaned up will increase. However, since EPA will recover all of its response costs associated with the work, no windfall lien pursuant to CERCLA 107 (r), will be appropriate.

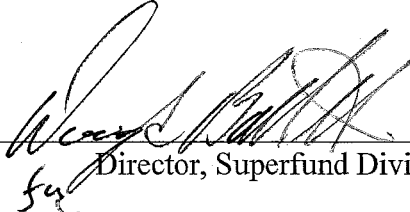
VIII. ENFORCEMENT

For administrative purposes, information concerning confidential enforcement strategies for current and future OUs are and will be contained in the attached Enforcement Confidential Addendum (Attachment 2).

IX. RECOMMENDATION

This decision document represents the selected removal action for future Lindsay Light Removal Site, which currently consists of Lindsay Light I, Lindsay Light II OU 00 to 21, and Lindsay Light III, Streeterville, Chicago, Illinois, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Lindsay Light Removal Sites (Attachment 1). Conditions at the Lindsay Light Removal Sites meet the NCP Section 300.415(b) (2) criteria for a removal action and I recommend your approval of the proposed removal action. You may indicate your decision by signing below.

APPROVE: _____


Director, Superfund Division

10/9/15
Date

DISAPPROVE: _____

Director, Superfund Division

Date

Attachments

1. Index to the Administrative Record
2. Table 1 Lindsay Light Removal Sites
3. Figure 1 Lindsay Light Sites Thorium Monitoring Area Map
4. Enforcement Confidential Enforcement Addendum

cc: B. Schlieger, U.S. EPA, 5104-G

V. Darby, U.S. Department of Interior, w/o Enf Addendum

J. Kim, Illinois Environmental Protection Agency, w/o Enf. Addendum

T. Rettig, Illinois Department of Natural Resources, w/o Enf. Addendum

B. Everetts, Illinois Environmental Protection Agency, w/o Enf. Addendum

T. Baughman, Illinois Department of Public Health, w/o Enf. Addendum

A. Khayyat, Illinois Emergency Management Agency, w/o Enf. Addendum

J. Johnson, Illinois Emergency Management Agency, w/o Enf. Addendum

M. Ames, Chicago Department of Law, w/o Enf. Addendum

B. Haller, Chicago Department of Planning and Development, w/o Enf. Addendum

D. Cooper, Chicago Park District, w/o Enf. Addendum

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**NOT RELEVANT TO SELECTION
OF REMOVAL ACTION**

ATTACHMENT 1

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

**ADMINISTRATIVE RECORD
FOR THE
LINDSAY LIGHT REMOVAL SITES
ENFORCEMENT ACTION MEMORANDUM**

**DETERMINATION OF THREAT TO PUBLIC HEALTH AND OR THE
ENVIRONMENT AT THE LINDSAY LIGHT REMOVAL SITES, CHICAGO,
COOK COUNTY, ILLINOIS (SITE SPILL ID # 05YL), (SITE SPILL ID # 05YT),
AND (SITE SPILL ID # 05ZA)**

**UPDATE # 13
SEPTEMBER, 2015**

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	921872	9/22/1993	Simon, V., U.S. EPA	Traub, J., U.S. EPA	Action Memorandum re: Request for a Time Critical Removal Action at the Lindsay Light I Site (<i>Portions of this document have been redacted</i>)	28
2	225375	9/28/1993	Ecology and Environment, Inc.	U.S EPA	Site Assessment Report for the Lindsay Light III Site	20
3	225367	3/28/2000	Simon, V., and Micke, F., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum re: Determination of Threat to Public Health or Environment at the Lindsay Light II Site/RV3 North Columbus Drive (<i>Portions of this document have been redacted</i>)	119
4	256743	8/22/2001	Simon, V., U.S. EPA	Mott, P., FDRG, LLC	Final Survey Report for Building at 22 W. Hubbard	25
5	226191	7/17/2002	Simon, V., and Micke, F., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum re: Determination of Threat to Public Health or Environment & Need for Time-Critical Removal Action at Family Gold Course/Lake Shore East Site (<i>Portions of this document have been redacted</i>)	38

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
6	363512	6/24/2010	Simon, V., U.S. EPA	Karl, R., U.S. EPA	Enforcement Action Memorandum re: Determination of Threat to Public Health or Environment at the Lindsay Light II Site/Du Sable Park (<i>Portions of this document have been redacted</i>)	25
7	918392	11/1/2010	Tronox Inc.	U.S. Bankruptcy Court - Southern District of New York	Exhibit 1: Consent Decree and Environmental Settlement Agreement	500
8	918393	11/30/2010	Tronox Inc.	File	Exhibit 2: Tronox Bank Settlement Distributions	4
9	405518	9/23/2011	Simon, V., U.S. EPA	Karl, R., U.S. EPA	Enforcement Action Memorandum re: Determination of Threat to Public Health or Environment at the Lindsay Light II Site/515 North Peshtigo (<i>Portions of this document have been redacted</i>)	21
10	437084	6/25/2012	Simon, V., and Jablonowski, E., U.S. EPA	Karl, R., U.S. EPA	Enforcement Action Memorandum re: Determination of Threat to Public Health or Environment at the Lindsay Light II Site/455 North Park Drive (<i>Portions of this document have been redacted</i>)	16
11	441188	11/9/2012	Simon, V., and Jablonowski, E., U.S. EPA	Karl, R., U.S. EPA	Enforcement Action Memorandum re: Determination of Threat to Public Health or Environment at the Lindsay Light II Site/164 East Grand (<i>Portions of this document have been redacted</i>)	17
12	919944	9/18/2013	Simon, V., U.S. EPA	Distribution List	Pollution Report (POLLREP) #2 - Final for OU13	5
13	919945	9/30/2013	Simon, V., U.S. EPA	Distribution List	Pollution Report (POLLREP) #2 - Final for OU18	5
14	918394	4/3/2014	Anadarko Petroleum Corp.	U.S EPA et al.	Notice of Lodging of Proposed Settlement Agreement	153

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
15	914896	8/14/2014	Simon, V., and Jablonowski, E., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum re: Determination of Threat to Public Health or Environment at the Lindsay Light II Site/545 North McClurg (<i>Portions of this document have been redacted</i>)	19
16	918545	8/20/2014	Borries, S., and Kyte, L., U.S. EPA	Patterson, K., U.S. EPA	Memo re: Request for Prior Written Approval for Disbursement of Lindsay Light II Special Account Funds Provided by the 2011 Tronox Bankruptcy Settlement/ Anadarko Litigation Trust to Reimburse PRPs that Performed Investigation, Cleanup, Transportation and Disposal of Lindsay Light II Thorium Contamination Pursuant to an Administrative Settlement Agreement and Order on Consent (<i>This document is included by reference in the Administrative Record</i>)	12
17	918543	8/29/2014	Ronquillo, M., U.S. EPA	Patterson, K., U.S. EPA	Memo re: Prior Written Approval for Disbursement of Special Account Funds for the Lindsay Light II Superfund Removal Actions in Chicago, Cook County, Illinois (<i>This document is included by reference in the Administrative Record</i>)	5
18	918544	3/31/2015	Borries, S., and Kyte, L., U.S. EPA	Patterson, K., U.S. EPA	Memo re: Request for Prior Written Approval for Disbursement of Lindsay Light II Special Account Funds Provided by the 2011 Tronox Bankruptcy Settlement/ Anadarko Litigation Trust Subject to Cooperative Agreements with the City of Chicago and the Chicago Park District (<i>This document is included by reference in the Administrative Record</i>)	4

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
19	918541	4/1/2015	Patterson, K., U.S. EPA	Borries, S., and Kyte, L., U.S. EPA	Memo re: Approval to Modify Previously Approved Special Account Disbursements to Potentially Responsible Parties for the Lindsay Light II Superfund Removal Actions in Chicago, Cook County (<i>This document is included by reference in the Administrative Record</i>)	2
20	918542	4/2/2015	Patterson, K., U.S. EPA	Borries, S., and Kyte, L., U.S. EPA	Memo re: Approval of Special Account Disbursements Subject to Cooperative Agreements with the City of Chicago and the Chicago Park District for Lindsay Light II Superfund Removal Sites in Chkago (<i>This document is included by reference in the Administrative Record</i>)	2
21	918546	5/26/2015	U.S. EPA	File	List of Operable Units at the Lindsay Light II Site	1
22	-	-	Simon, V., U.S. EPA	Karl, R., U.S. EPA	Enforcement Action Memorandum re: Determination of Threat to Public Health and or the Environment at the Lindsay Light Removal Sites, Chicago, Cook County, Illinois (Site Spill ID # 05YL), (Site Spill ID # 05YT), and (Site Spill ID # 05ZA) (<i>PENDING</i>)	-

TABLE 1-LINDSAY LIGHT REMOVAL SITES

MAP#	Address	OU	Removal Work	Current/Future Use
1.	161 East Grand (Lindsay Light I)		Partial interior cleanup	Ongoing post-production facility (Opt1mus), that is now for sale
2.	160 East Illinois	OU 11	Foundation excavated contamination in alley	Residential high rise
3.	201-205 East Grand		Investigation indicated no surface contamination	Restaurant (Volare)
4.	211 East Grand	OU 16	Foundation excavated; recorded UECA deed	Ronald McDonald House
5.	215 East Grand		Indoor gamma survey by EPA	Restaurant (TBA)
6.	200 East Illinois	OU 01	Foundation excavated	Commercial/residential high rise (Grand Pier)
7.	245 East Ohio*	OU 06	Foundation excavated	Removal complete awaiting reuse
8.	600 North Fairbanks/252 East Ohio	OU 12	Foundation excavated	Residential high-rise
9.	164 East Grand*/550 North St. Clair	OU 20	Foundation excavated; recorded UECA deed	Restaurant (Burger Bistro)
10.	550 North St. Clair		Investigated, no contamination found	Mixed use high-rise building
11.	150-160 East Ontario		Ongoing Investigation	Anticipate high-rise
12.	240 East Ontario	OU 19	Foundation excavated	Medical offices (NMH)
13.	635 North Fairbanks	OU 12	Investigated; cleaned	Medical offices
14.	630 North McClurg	OU 15	Foundation excavated	Ongoing construction for future RIC Hospital
15.	600 North Lake Shore Drive		Investigated and no contamination identified	High-rise
16.	Jane Addams Memorial Park		Surface scan; no surface contamination	Park
17.	515 North Peshtigo*	OU 18	Foundation excavated; recorded UECA deed	Residential high-rise
18.	455 East Illinois/400 East Illinois/510 N. Peshtigo*	OU 10	Former Kraft building/parking lot; Foundation excavated under Parcel 1. Foundation remains under Parcel 2	Residential high-rise with underground parking (Parkview) Construction of Parkview East is expected in Fall 2015.
19.	545 N. McClurg/401 East Ohio	OU 14	Ongoing investigation and cleanup	Anticipate high-rise
20.	341-355 East Ohio	OU 03	Two-thirds block excavated	Mixed use high-rise buildings

MAP#	Address	OU	Removal Work	Current/Future Use
21.	316 East Illinois**	OU 00	Entire block excavated (former parking lot)	Mixed use high-rise building with movie theater, hotel and residences, underground parking (River East)
22.	465 North Park*	OU 07	Foundation excavated	Construction support area for 455 North Park
23.	455 North Park*	OU 13	Foundation excavated; recorded UECA deed	Future Loews hotel and residential tower
24.	Riverview and Promenade		Investigated and no contamination identified	Town-houses and riverwalk
25.	Calatrava Spire		Investigated and no contamination identified.	No use restrictions. Residential development.
26.	DuSable Park***	OU 04	Surface contamination removed; UECA negotiations	Future CPD park, flyover bridge to Navy Pier, construction begins 2014
27.	Lakeshore East/New Eastside Neighborhood Parcel O & P	OU 05, OU 08, and OU 09	26+ acres. Excavated contaminated slip areas and contaminated soils >1900 fill level. Recorded deed restrictions. UECA negotiations.	Multi-use residential/commercial/educational development with multiple high rise buildings, and two schools Elementary school completed. High school construction slated for 2015.
28.	130 East Lake		Investigated and no contamination identified	High-rise
29.	22 West Hubbard (Lindsay Light III)		Partial interior cleanup	Restaurant (Rock It Bar & Grill)
30.	Alley between 161 East Grand and 160 East Illinois		Ongoing investigation and cleanup	Alley
31.	600 E Grand/Navy Pier ***	OU 21	Ongoing construction and remediation. Draft ASAOC sent to Navy Pier.	Recreational Use
32.	636 N. Michigan		Contamination identified.	Shopping area sidewalk
33.	Between Illinois and Ogden Slip/Navy Pier Flyover Bridge***		Ongoing construction and remediation	Recreational Use
34..	Beverly Gravel-Hoffman Estates**	OU 02	Contaminated by spoils from 200 East Illinois. Recorded UECA	Future use to be determined.
35.	500-599 East Illinois		Contamination identified	Park area
N/A	Lake Point Tower		Surface scan; no surface contamination	Residential high-rise
N/A	535 North St. Clair		Ongoing investigation	High-rise

MAP#	Address	OU	Removal Work	Current/Future Use
N/A	Ogden Plaza Park		Surface scan	Park over parking garage
N/A	405 East Ontario		Investigated and no contamination identified	Parking lot
		Legend: * Consent Order* *Unilateral Order ***Cooperative Agreement		

Lindsay Light Streeterville Thorium Monitoring Area

Disclaimer: This map is for illustrative purposes only, does not accurately depict legal surveys or descriptions, and is subject to change. The information described and depicted includes areas undergoing investigations and cleanups. This map may contain errors, omissions, or positional inaccuracies, and should not be relied upon to confirm or refute the presence of thorium contamination. To confirm the information depicted, contact EPA Region 5, Emergency Response: Verneta Simon (312) 886-3601 or Gene Jablonowski (312) 886-4591.

1. 101 East Grand (Lindsay Light I. Known Contamination Removed) †
2. 100 East Illinois
3. 201-205 East Grand
4. 211 East Grand *
5. 215 East Grand *
6. 200 East Illinois
7. 245 East Ohio
8. 600 North Fairbanks (aka Columbus Drive)
9. 104 East Grand *
10. 550 North St. Clair
11. 150-160 East Ontario
12. 240 East Ontario
13. 630 North Fairbanks (aka Columbus Drive)
14. 630 North McClurg
15. 600 N. Lake Shore Drive
16. Jane Addams Memorial Park
17. 515 North Peshtigo *
18. 455 East Illinois/400 East Illinois/510 North Peshtigo
19. 545 N. McClurg ††
20. 341-355 East Ohio
21. 318 East Illinois (Lindsay Light II)
22. 465 North Park (No Surface Contamination)
23. 455 North Park *
24. Riverview & Promenade
25. Former Calatrava Spire property
26. DuSable Park (No Surface Contamination) *
27. Lake Shore East **
28. 130 East Lake
29. 22 West Hubbard (Lindsay Light III) †
30. Alley between 161 East Grand and 180 East Illinois
31. 600 East Grand ††
32. 636 North Michigan
33. East Illinois & Lower North Lake Shore Drive Intersection
34. Beverly Gravel - 2600 Beverly Road, Hoffman Estates (Not Shown) *
35. 500-599 East Illinois Street

The Thorium Monitoring Area encompasses all buildings and rights-of-ways within the three areas depicted north and south of the Chicago River. Where a boundary line runs along a street thorium monitoring is required for properties within the boundary and the sidewalks in front of those properties.

Legend

- Thorium Monitoring Area
- Investigated/No Contamination
- Excavated Contamination Removed
- Ongoing Investigation and/or Cleanup
- Scan Indicated No Surface Contamination

FIGURE 1
LINDSAY LIGHT STREETERVILLE THORIUM MONITORING AREA MAP

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*Deed restriction required due to uninvestigated or known contamination areas.

**All surface contamination removed. Multiple properties within area have been cleaned up.

†Demolition monitoring required.

††Thorium and Asbestos contamination present.



0 420 840 1,680 2,520 3,360 Feet



August 19, 2015



ENFORCEMENT ADDENDUM

HAS BEEN REDACTED – FIVE PAGES

ENFORCEMENT CONFIDENTIAL

NOT SUBJECT TO DISCOVERY

FOIA EXEMPT

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION